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A new species of *Marcelleina* from Italy

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Abstract — *Marcelleina mediterranea* is described as a new species and is illustrated. It occurs on sandy soil among scattered mosses, in Southeast Sicily (Italy). It differs from other species in size and ornamentation of ascospores. Its ecology and taxonomical relationships are examined.

Key words — *Pezizales*, *Pyronemataceae*, morphology, taxonomy

Introduction

A peculiar *Marcelleina* species was found growing on sandy soil among scattered mosses during field investigation in southeastern Sicily, in the Riserva Naturale Orientata Sughereta di Niscemi (Caltanissetta). The large reserve, nearly 3000 hectares, centers on the remnants of what was previously the largest cork center in Sicily. This well delimited new *Marcelleina* species is described below as *M. mediterranea*. The genus, which previously was referred to the *Pyronemataceae,* is now treated in the *Pezizaceae* based on molecular data (Hansen et al. 2001). Approximately ten species are now recognized in *Marcelleina*.

Materials and methods

This study is based on field collections made in the winter of 2008 in an area that extends in altitude from between 50 and 350 m. The area is characterized by the presence of *Quercus suber* L. with shrubby Mediterranean elements including *Cistus creticus* L., *C. monspeliensis* L., *C. salvifolius* L., and *Pistacia lentiscus* L.

Morphologic and microscopic examinations were carried out on fresh material and on dried specimens, which were rehydrated in water. Observations and measurements were made in water and Melzer's reagent to observe ascus reactions and colour changes in the pigments within the paraphyses. Sizes of excipular cells, spores, and paraphyses were reported from the measurement of 50 individual structures, using an Optika

optical microscope (model BK 1301), with 40× or 100× (oil immersion) objectives. All voucher specimens cited below are deposited in the herbarium of the Royal Botanic Gardens, Kew K(M) and in the Farlow Herbarium, Harvard University (FH).

Taxonomy

Marcelleina mediterranea Lantieri & Pfister, **sp. nov.** Figure 1

MycoBank MB 516039

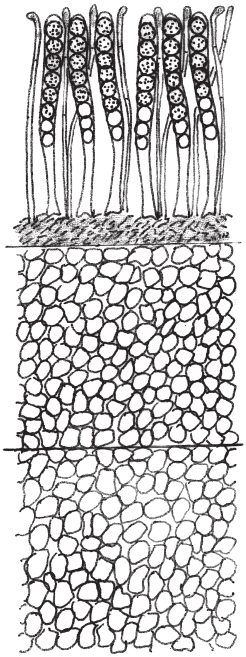
Apothecia 3–5 mm diam., sessilia, discoidea vel applanata, hymenium obscure violaceum vel nigroviolaceum; externe glabrum, concolor; margine perspicuo, plus minusve undulato. Ascosporae (13–)14–18 µm diam., sine ornamentis, uniseriatae, globosae, hyalinae, uniguttulatae, tuberculis circa 1 µm altis et circa 2 µm latis praeditae. Asci 250–300 × (15–)18–19 µm, cylindracei vel leviter cylindrico-clavati, inamyloidei, octaspori, basi pleurorhynca praediti, nonnulli basi irregulari et simplici. Paraphyses rarae, leviter claviformes, in superiore parte inflatae usque ad 5–6 µm, curvatae, septatae, pigmento brunneolo. Hymenium 290(–300) µm altum, superne brunneoviolaceum, inferne albidobrunneolum; subhymenium brunneolum, 60–80 µm crassum; medullare excipulum 150–300 µm crassum, griseobrunneolum, textura globulosa, cellulis pallide brunneis, tenuitunicatis, globosis vel subglobosis, usque ad 5 m diam. vel longioribus, 5–18 × 12 µm; ectal excipulum 50 µm crassum ad margines, 370 µm crassum ad basin, textura globulosa vel globulosa-angulari, cellulis obscure brunneis, tenuitunicatis, globosis, subglobosis vel plus minusve polygonalibus, usque ad 30 µm diam., nonnullis longioribus, 45–50 × 30 µm; paucis hyphis septatis intermixtis, circa 5 µm diam.

Holotype: Italy, Sicily: *in loco "Sughereta of Niscemi" dicto, prope Caltanissetta, in solo sabuloso, parce gregarius vel solitarius, inter muscos sparsos iuxta* Cistum creticus, C. monspeliensem, C. salvifolius *et* Pistaciam lentiscus, 31/01/08, *lectus, legit A. Lantieri, in Herbario FH, sub* n. 00284462 *conservatur; isotypus* n. 164532 *in Herbario KM conservatur.*

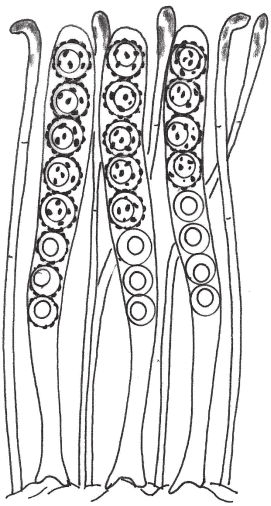
Etymology: *Mediterranea* referring to the Mediterranean area, where the species was found.

Apothecia 3–5 mm diam., sessile, discoid to flattened, hymenium dark violaceous to black-violaceous; outside glabrous, concolorous; margin evident, more or less undulate. Ascospores (13–)14–18 µm diam. (without ornamentations), uniseriate, globose, hyaline, uniguttulate, tubercles about 1 µm high and about 2 µm wide. Asci 250–300 × (15–)18–19 µm, cylindrical or slightly cylindrical-clavate, non-amyloid, 8-spored, with a pleurorhyncous base, a few asci have irregular and simple bases. Paraphyses scarce, slightly claviform, expanded in the upper part up to 5–6 µm, curved, septate, containing brownish pigments. Hymenium 290(–300) µm high, brown-violaceous in the upper part, whitish-brownish in the lower regions. Subhymenium brownish

Figure 1. *Marcelleina mediterranea*: A Radial section through the excipulum and hymenium of an apothecium. Scale bar = 50 µm. B Uppermost zone of the hymenium (tips of paraphyses and asci with ascospores). Scale bar = 10 µm. C Apical section of the hymenium with asci and paraphyses. Scale bar = 10 µm. D Released ascospores. Scale bar = 60 µm.



A



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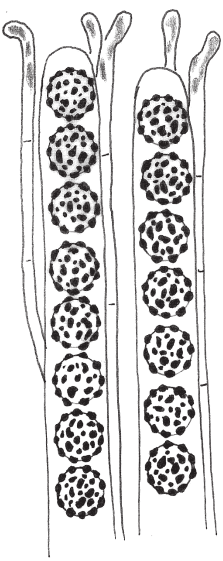

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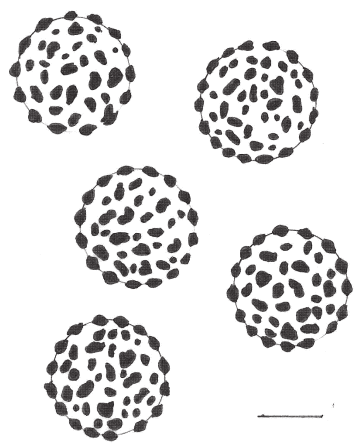

D

60–80 µm thick. Medullary excipulum 150–300 µm thick, grey-brownish, of textura globulosa, cells brown pale, thin-walled, globose or subglobose, up to 5 µm diam., or longer, and then 5–18 × 12 µm. Ectal excipulum 50 µm thick at the margins, 370 µm thick toward the base, of textura globulosa or globulosa-angularis, cells dark-brown, thin-walled, globose, subglobose or more or less polygonal, up to 30 µm diam., some cells appear longer, of 45–50 × 30 µm and intermixed with scarce interwoven septate hyphae, about 5 µm diam.

Habitat: on sandy soil, in small groups or solitary, among scattered mosses near *Cistus creticus, C. monspeliensis*, *C. salvifolius* and *Pistacia lentiscus*; in winter.

Known distribution: Italy.

Additional specimen examined – **ITALY. Sicily: Niscemi** (**Caltanissetta**), 06/02/2008, K(M) 164533.

Discussion

This species is refered to *Marcelleina* based on its small purplish apothecia with light brown pigments in the hyphal walls of the outer excipulum and its hyaline spores; *M. mediterranea* differs from other described species of the genus in ascospore size and ornamentation.

The new species resembles *M. tuberculispora* K. Hansen & Sandal, described from Denmark, but this latter species has smaller (11.3–12.5 µm diam.) ascospores with dense, rounded warts variably sized up to 1.3 µm high (Hansen et al. 1998). Furthermore, *M. tuberculispora* grows on calcareous soil, which is not found where *M. mediterranea* was collected.

Marcelleina pseudoanthracina (Donadini) R. Kristiansen & J. Moravec differs from *M. mediterranea* in having smaller (7–8.5 µm diam.) ascospores with irregularly rounded to angular, isolated or scattered warts up to 0.5 µm high (Moravec 1987) and in its habitat – *M. pseudoanthracina* generally grows on clayey soil or sometimes also burnt places.

The new species has been found in Mediterranean area, near *Cistus creticus*, *C. monspeliensis*, *C. salvifolius* and *Pistacia lentiscus*, which are typical elements on the sandy soil of the Mediterranean bush. *Marcelleina mediterranea* is a species that fruits from the last week of January to the first two weeks of February. Tedersoo et al. (2009) delimit a lineage including *Marcelleina*, *Peziza gerardii,* and *Hydnobolites* that is mycorrhizal. Certainly in this case several mycorrhizal partners might be present.

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